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METHOD OF DATA LAYERS AND SCATTER DIAGRAMS SUPPORTING PROJECTS IN THE SYSTEM OF QUALITY MANAGEMENT AND CERTIFICATION

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Data layering method

Abstract. *This paper explores the application of date layers and scatter diagrams within the framework of quality management and certification projects. Date layers offer a visual representation of project timelines, facilitating planning, tracking, and analysis. Scatter diagrams provide insights into relationships between variables, aiding in the identification of patterns and correlations crucial for quality improvement and certification processes. Integrating these tools enhances organizational performance monitoring, identifies areas for improvement, and fosters compliance with quality standards.*

Keywords: *Date layers, Scatter diagrams, Quality management, Certification projects, Project planning, Performance monitoring, Quality improvement, Compliance.*

МЕТОД СЛОЕВ ДАННЫХ И ДИАГРАММ РАССЕЯНИЯ ПОДДЕРЖКИ ПРОЕКТОВ В СИСТЕМЕ УПРАВЛЕНИЯ КАЧЕСТВОМ И СЕРТИФИКАЦИИ

Аннотация. *В данной статье исследуется применение слоев данных и диаграмм разброса в рамках проектов управления качеством и сертификации. Слои данных обеспечивают визуальное представление сроков проекта, облегчая планирование, отслеживание и анализ. Диаграммы разброса дают представление о взаимосвязях между переменными, помогая выявить закономерности и корреляции, имеющие решающее значение для процессов повышения качества и сертификации. Интеграция этих инструментов улучшает мониторинг эффективности организации, определяет области для улучшения и способствует соблюдению стандартов качества.*

Ключевые слова: *слои данных, диаграммы разброса, управление качеством, проекты сертификации, планирование проекта, мониторинг производительности, улучшение качества, соответствие требованиям.*

Using this method, statistical data is stratified, that is, data is collected and grouped depending on the conditions of individual processing of each group. The process of dividing data into pencils and layers grouped by their characteristics is called stratification.

There are several layering methods, and in practice the 5M method is often used, taking into account factors related to man (person), machine (machine), material (material), method (method), measurement (measurement).

Layers are applied as follows:

- stratification by performers - by qualifications, length of service, shifts and other information;

-classification of machinery and equipment - by brand, manufacturer, design and other information;

- stratification by materials - by place of production, price, quality of raw materials and other information;

- stratification by production features (methods) - by technological development, place of production and other information.

During the layering process, the following conditions should be taken into account:

- the value of mutual differences of random variables within a layer (variance) should be as small as possible compared to its differences in the original unstratified set;

- the difference between the layers (the mutual difference in the average random value of the sizes of the layers) should be as large as possible.

Scatterplot method

Another name for the method is “Scatter plot”, “Correlation plot”.

In 1979, the Association of Japanese Scientists included the scatterplot as one of its seven quality control methods.

The task of the method. It is used at various stages of the product life cycle and in production to determine the interdependence of the main production factors and quality indicators. The scatter plot method is one of the tools for statistical quality control (Fig. 15.4).

The purpose of the method. Define a description of the relationship between two different process parameters and determine whether the relationship exists.

The essence of the method. A scatterplot is a tool that allows you to determine the type and strength of relationship between two significant variables.

These two variables:

-description of quality and factors influencing it;

- two different quality descriptions;

- two factors influencing one description of quality.

If there is a relationship between two factors, this significantly facilitates process management both from an economic and time-based technological point of view.

Scatter plots are used in the quality control process, as well as to determine cause-and-effect relationships and factors affecting quality indicators.

Action plan. To clarify the influence of one variable on another, it is necessary to collect the necessary data and enter it into the registration sheet.

Based on the data obtained, a scatter diagram is constructed and the diagram is analyzed. Sometimes it is desirable to quantify the degree of correlation or strength of correlation between random variables.

The uniqueness of the method. A scatterplot is a scatter plot that graphically represents the points obtained from an observation made by plotting the scale of a particular experiment. The coordinates of the points on the graph correspond to the value of the observed value and the factors influencing it. The arrangement of dots indicates the relationship and description of two variables (for example, gas mileage and speed, or output and production hours).

Based on the obtained experimental points, it is possible to determine numerical descriptions of the relationship of random variables, i.e. correlation coefficient and regression coefficients.

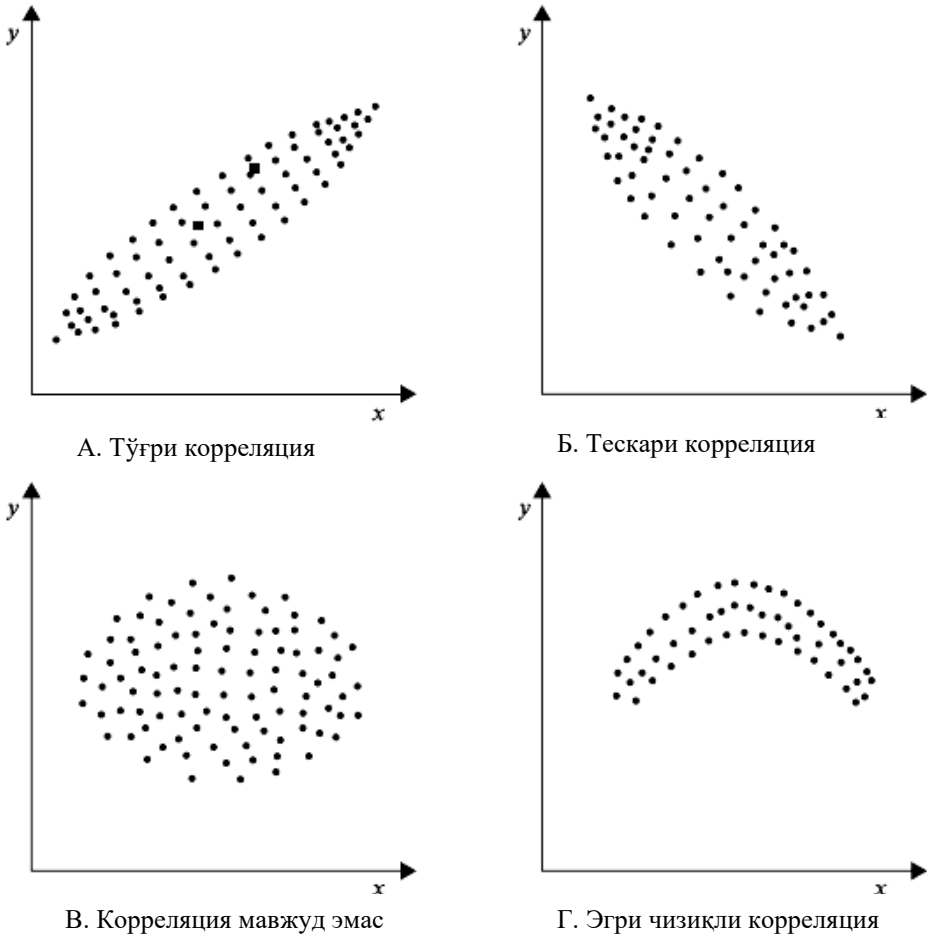

Figure 15.4. Scatter (scatter) diagram.

Rules for constructing a scatterplot:

1. It is necessary to determine which pairs of data and descriptions are interrelated. It is better to have at least 25-30 pairs of data.

2. Preparation of a tabular form (registration sheet) for data collection, indicating the serial number of the i-th observation in the columns; descriptions of independent variables known as x arguments; is intended to note the dependence of variables called function (reaction) y.

3. Filling out the data registration form based on the monitoring results.

4. Based on the obtained data, a graph of x-y coordinates is constructed and the data is placed on it. The length of the axes should be equal to the maximum and minimum x and y values, and the vertical and horizontal axes should be the same for the chart to be easy to read.

5. The diagram contains all the necessary symbols. The information displayed on the diagram should be understandable not only to the person who compiled the diagram, but also to any person.

In this case, the characteristics y (function) remain stable while controlling the causal factors x (reactions).

Additional Information:

It is important to note that just because two variables appear to be related does not mean they are.

Just because the data appears to be related does not mean that it is not related, i.e., there is only so much data presented, or the data is divided into classes and each class has its own chart and large measurement errors are allowed. kit.

Pay attention to the method. Ease and clarity of assessing the relationship between two variables.

Disadvantage of the method. To avoid misuse of this method, a person knowledgeable about the product must be involved when evaluating the chart.

Expected Result. Decide whether to take necessary action based on scatterplots.

In conclusion, the integration of date layers and scatter diagrams into quality management and certification projects proves to be highly beneficial. Date layers offer a clear visualization of project timelines, aiding in effective planning and tracking of milestones. Scatter diagrams provide valuable insights into the relationships between variables, enabling the identification of patterns and correlations crucial for quality improvement and certification processes. By leveraging these tools, organizations can enhance their ability to monitor performance, identify areas for improvement, and ensure compliance with quality standards. Ultimately, the use of date layers and scatter diagrams contributes to the overall success and effectiveness of quality management and certification initiatives.

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